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Technical Bulletin:

Western Flower Thrips is now resistant to many classes of insecticides. Few effective products are registered in Canada, prompting a major shift in growers' approach to thrips management and biological controls. In research conducted by Michael Brownbridge, Taro Saito, Rose Buitenhuis, and Angela Brommit from Vineland Research and Innovation Centre, Ontario, Canada and Graeme Murphy from Ontario Ministry of Agriculture, the relative efficacy of the microbial control agent, *Beauveria bassiana*, with and without the application of nematodes (*Steinernema feltiae*) was assessed. BotaniGard® 22WP* (containing 4.4×10^{10} cfu/g *B. bassiana* strain GHA) was utilized for the study.



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MATERIAL AND METHODS:

Unrooted chrysanthemum cuttings were directly planted in standard 6" pots in Sunshine® Mix #1 (Sun Gro Horticulture), four plants/pot. Plants were naturally-infested with Western Flower Thrips; pre-treatment infestation levels were ca. 6 larvae/pot, replicating the status of a commercial crop in a similar stage of production. Two weeks after potting, blocks of 50 pots were treated as follows:

1. Untreated Control
2. An initial soil drench of 50 million nematodes*/100 m² followed by 8, weekly foliar sprays at 50 million nematodes/200 m²s
3. Weekly 'sprenc'h' applications (total 9 treatments) at 50 million nematodes/200 m²
4. W Weekly sprays of BotaniGard® (weeks 1-3) at 1.2g/L plus 0.02% Slither® surfactant (Loveland Chemical Industries) with a fourth spray at week 5
5. Weekly nematode sprenc'h (as per treatment '3') followed 24 hours later with a BotaniGard spray (as per treatment '4')

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Mean number of chrysanthemum leaves sprenced or foliar sprayed

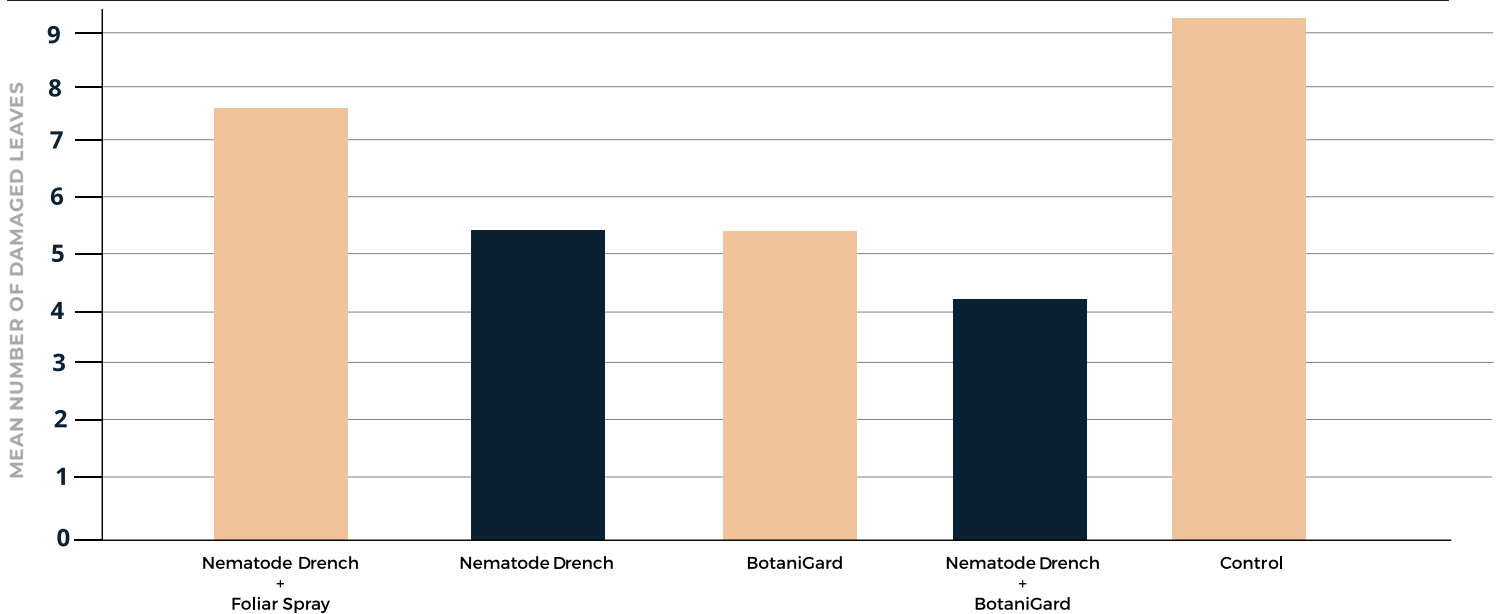


Figure 1. Mean number of chrysanthemum leaves (out of 20) per plant showing thrips feeding damage after treatment with *Steinernema feltiae* (sprenced or foliar spray) and/or BotaniGard

Sprays were applied using an electric backpack sprayer fitted with a dual fan nozzle; sprences were applied using the same sprayer at 85 psi and fitted with an adjustable cone nozzle.

ASSESSMENT

Every 2 weeks, thrips populations were assessed using a 'plant washing' technique. After 10-weeks, 5 pots were selected at random from each block and 20 leaves from each pot were examined for the presence/absence of thrips feeding scars. Plant damage was analyzed with ANOVA using Tukey's test to compare across treatments.

RESULTS

Thrips numbers were significantly lower on plants treated with nematodes and/or BotaniGard than the control. There were significant differences among treatments. Most damage was observed in the control; 42% of the leaves showed feeding scars whereas only 21% of the leaves were scarred in the nematode sprenced + BotaniGard treatment. Better protection from damage due to thrips was obtained using the combined vs. individual treatments. The microbials tested in this study work primarily in different environments; nematodes attack thrips pupae in the growing medium, and BotaniGard attacks thrips larvae and adults on the foliage. BotaniGard acts primarily on the feeding stages of the insect, reducing leaf damage.



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